

Applicant: Stuart M. Gleman  
Serial No: 10/074,826  
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### Amendments to the Specification

1. Please add the following as a new paragraph beginning after the paragraph ending at Page 16, line 4.

B1  
"The present invention provides an imaging system for medical and other applications in which the internal structures of an overall object must be seen without invading or damaging the object. The system works by transmitting electromagnetic waves of single or a multiplicity of frequencies through the object (for example the human body) and measuring the absorption and scattering of these waves by the various structures and inhomogeneities of the object, using scanning sub-wavelength resolution detectors. An "X-Ray" type of image can be created by an x-y planar scan of the detectors (and sometimes the source) over the object. A "CAT-Scan" three-dimensional image can be created by a cylindrical (theta-z) scan of the detectors and sources around and along the object. The device uses sensitive detection and scanned apertures to accomplish the transmission and sub-wavelength spatial resolution. Diffraction effects from the structures are compensated in the imaging algorithm software, using several techniques, such as comparison of the data with measured and calculated diffraction patterns for the generic object, and changing the distance of the source and the detector on alternate scans.

2. Please amend the paragraph beginning on Page 19, line 18 as follows:

B2  
Cont'd  
"A particular embodiment of the invention 10 is shown schematically in Figure 1.. Here an RF signal source 20 provides a constant power level of RF power to the sending or transmitting antenna 30. The source can be modulated with a repetitive pattern e.g. square wave modulated or pseudo-random noise modulated, in order to facilitate detecting the small amount of signal power

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B2  
end

actually transmitted through the subject 40. The ~~detecting~~  
transmitting antenna 30 delivers whatever power is actually  
transmitted through the subject to the receiving antenna 50A and  
detector 50B. The detector 50B in turn sends the signal to the  
electronics subsystem, which provides the digitized signal 60 to  
the computer 70 for processing by an algorithm set to deliver the  
final image to the graphic display 80. The image is obtained in  
this embodiment via scanner 90 by scanning the receiving antenna  
50A and transmitting antenna 30 rigidly affixed to one another by  
mechanism 100 (see Figure 2) in a raster or other type of  
systematic scan pattern. The raw detected signal is captured as a  
function of the X-Y coordinates of the transmitter and receiver  
antennas, and the computer displays the resulting smoothed,  
sharpened, transformed, enhanced or otherwise digitally processed  
image to the user (or alternatively print its out on a printer),  
and archives it for future reference."

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3. Please amend the paragraph beginning on Page 22, line 1 as  
follows:

B3

"A proof-of-concept experiment, corresponding to the  
embodiment shown in Figure 1 and Figure 2 has been performed with  
very simple apparatus to show the feasibility of this technique for  
seeing inside subjects. In the first experiments, line scans of  
through-transmission of approximately 10 gc microwaves were  
obtained. Results of linear scans across a human hand and forearm  
are shown on Figures 4a and 4b, respectively."

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